

32212-000  
20.02.00.0018

PSC 17/18

**RADIOLOGICAL SURVEY REPORT**

**FOR**

**REMEDIATION ACTIVITIES**

**AT**

**THE NAVAL AIR STATION, JACKSONVILLE, FLORIDA**

**ADDENDUM 2**

Under Contract No. N62467-93-D-0936

Prepared by Bechtel Environmental, Inc.  
Oak Ridge, Tennessee

February 1997

Revision 0

Bechtel Job No. 22567

Prepared by:

2/Walker  
Senior Scientist

2-20-97  
Date

Approved:

H. Harris  
Project Manager

2/25/97  
Date

## CONTENTS

	Page
FIGURE.....	ii
TABLE.....	ii
1.0 INTRODUCTION.....	1
2.0 RADIOLOGICAL SURVEY RESULTS.....	1
3.0 CONCLUSIONS.....	4
4.0 REFERENCES.....	4
Attachment: East Cove Area Post-Remediation and Restoration Dose Rate Measurements	

### FIGURE

Number	Title	Page
2-1	Gamma Dose Rate Measurements (PIC) - $\mu\text{R}/\text{Hr}$ .....	3

### TABLE

Number	Title	Page
2-1	Post-Remediation Dose Rate Measurements Over Phase II Excavation Areas.....	2

## 1.0 INTRODUCTION

Remediation of the East Cove area of PSC 17/18 at NAS-JAX was completed in two phases. The first phase (Phase I) was completed in January 1996, with post remediation survey results documented in March 1996 (Ref. 2). The excavations performed in this first phase were restricted in the direction of the river by the wetlands designated along the shoreline. However, the initial characterization (Ref. 1) indicated that levels of elevated activity above the unrestricted release criteria extended to the waterline of the river. After obtaining proper authorization, the second phase (Phase II) was conducted to remove any remaining activity above the unrestricted release criteria. This phase was completed in July 1996 and the post remediation survey results documented in Addendum I to the March 1996 Survey Report (Ref. 3).

These two survey reports (Ref. 2 and 3) were reviewed by RASO with verbal comments provided, followed by written comments (Ref. 4). Bechtel responded to the verbal comments (Ref. 5) and made corresponding changes/corrections to the appropriate survey reports. One additional request by RASO required additional measurements. This comment from Reference 4 stated: "After backfilling, perform a radiation survey to demonstrate radiation exposure levels of remediated areas." These radiation measurements were completed in November 1996.

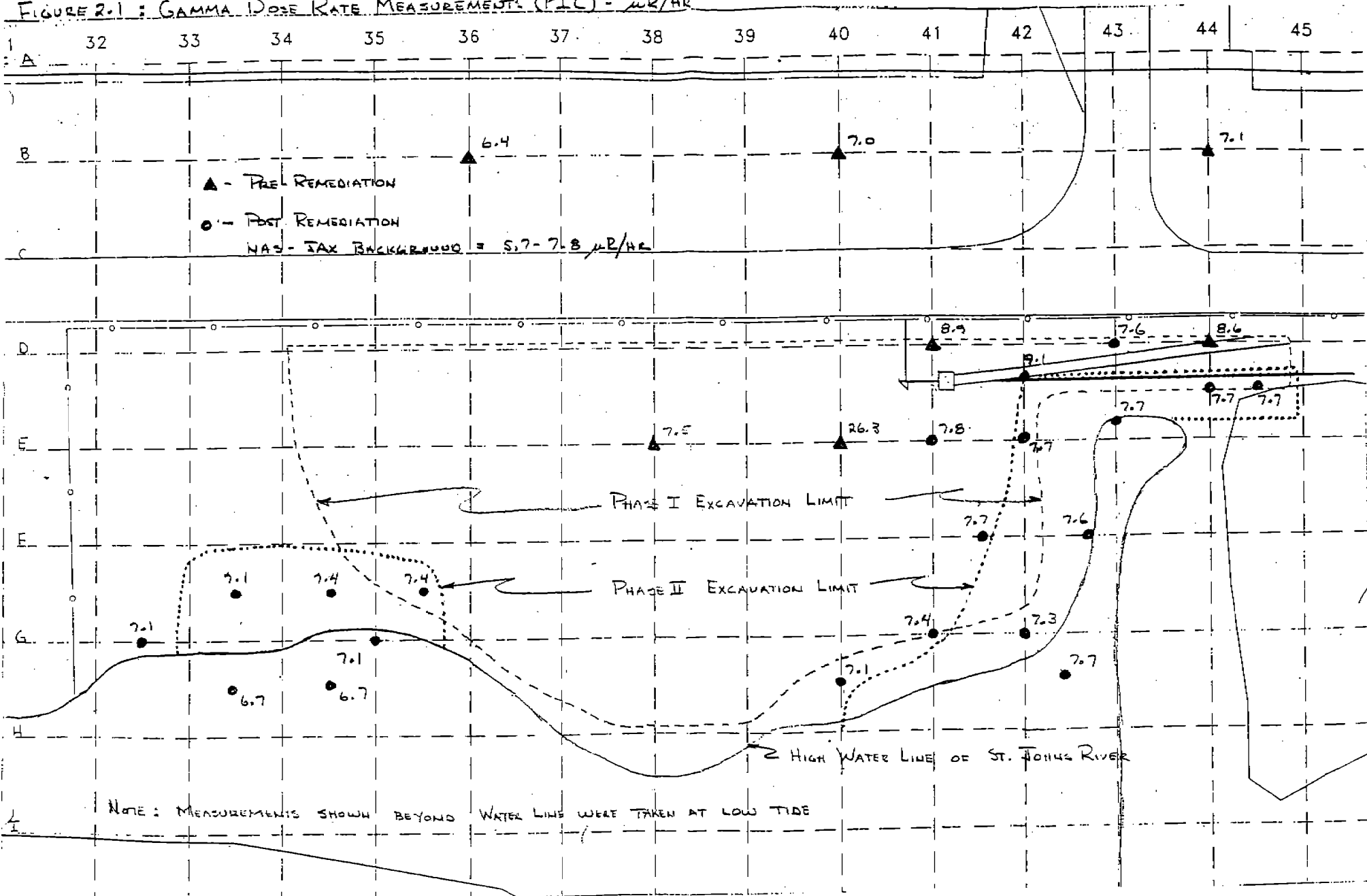
In February 1997, Bechtel issued a written response to the written comments from RASO (Ref. 6). In this response, it was noted that the radiation measurements had been completed and a final transmittal of those results would be issued. This report is to document those results and is Addendum 2 to the Phase I remediation survey report (Ref. 2).

## 2.0 RADIOLOGICAL SURVEY RESULTS

Based on the radiological measurements of the excavated areas at completion of remediation (Ref. 2 and 3), RASO concurred with backfilling these areas. Bechtel restored the area to the original contours and seeded the area. In November 1996, the regrowth was cut to allow clear access; the original grid system was re-established, and the Phase II areas resurveyed. Radiological dose rate measurements were made using a pressurized ion chamber (PIC) at locations referenced to the grid. Table 2-1 provides the results of that survey. The post-remediation and restoration survey results are shown on Figure 2-1, with the PIC measurements that were obtained during characterization for comparison. The field logs for these measurements are provided in the attachment to this addendum.

As indicated on Figure 2-1, no post-remediation dose rate measurements were obtained at the same grid locations as the pre-remediation measurements; however, the dose rates over the backfilled excavated areas are within the NAS-JAX site background variation. These dose rate measurements support the results of the Phase I and Phase II post-remediation radiological survey data. One slightly elevated location is noted at grid location D/E-42. This point is located directly over the concrete water line that was contaminated with Ra-226 above the release criteria. The unshielded dose rate at this location was estimated to be 68  $\mu\text{R/hr}$  on contact with the concrete pipe. The backfill has reduced this to 9.1  $\mu\text{R/hr}$ , approximately 1.4  $\mu\text{R/hr}$  above the surrounding area. This is equivalent to approximately 12 mrem/yr above the surrounding background, which would satisfy current proposed regulatory criteria for unrestricted release of 15 mrem/yr.

FIGURE 2.1 : GAMMA DOSE RATE MEASUREMENTS (PLC) -  $\mu R/HR$



### 3.0 CONCLUSIONS

The dose rate measurements over the backfilled excavations in the East Cove area of PSC 17/18 confirm that the remediation and subsequent restoration may be released for unrestricted use by the Naval Air Station, Jacksonville, Florida.

### 4.0 REFERENCES

- (1) Walker, E. "PSC 17/18 Radiological Survey Report for the Naval Air Station, Jacksonville, Florida," prepared for the U.S. Navy, Southern Division - Naval Facilities Engineering Command, by Bechtel Environmental, Inc., October 1995.
- (2) Walker, E. "PSC 17/18 Radiological Survey Report for the Remediation Activities at the Naval Air Station, Jacksonville, Florida," prepared for the U.S. Navy, Southern Division - Naval Facilities Engineering Command, by Bechtel Environmental, Inc., March 1996.
- (3) Walker, E. "PSC 17/18 Radiological Survey Report for the Remediation Activities at the Naval Air Station, Jacksonville, Florida, Addendum 1," prepared for the U.S. Navy, Southern Division - Naval Facilities Engineering Command, by Bechtel Environmental, Inc., July 1996.
- (4) O'Toole, S. A. (Acting), Letter to Commanding Officer, Naval Air Station, Jacksonville, "Review of Radiological Survey Reports on PSCs 3, 9, 15, 16, 17, 18, 25, 32, 40, 41, 42, and 43 at Naval Air Station, Jacksonville," from Radiological Affairs Support Office (RASO), dated September 5, 1996.
- (5) Walker, E. IOM to H. Bauer, "Resolution of RASO Comments on Final Survey Reports for PSC 17/18," Bechtel Environmental, Inc., Oak Ridge, Tenn., September 5, 1996.
- (6) Walker, E. Letter to D. Lancaster, Facilities Environmental Naval Air Station, Jacksonville, "Response to RASO Comments on Bechtel Environmental, Inc. Radiological Survey Reports," dated February 3, 1997.

**ATTACHMENT**

**EAST COVE AREA POST-REMEDIATION AND RESTORATION  
DOSE RATE MEASUREMENTS**

(105)

11-6-96

- Set out Pin flags @ Site 18 for PIC Reading.
- Talked w/E. Walker on Locations.
  - o Do Same Locations AS before
  - o Do a Couple of Biased Reading Along Concrete Duct bank
  - o Do 10-20.
- Marked up a Plan & FAX'd to Ed, OK'd by Ed.
- PIC coming from SEC (423) 690 0501

JE 11-7-96

11-7-96 11-11-96 JER 11-11-96 (106)

POINT	Start Time	END Time	INT	AUG	MAX	MIN	STD
DE 44/45	11:22	11:40	2.3	7.7	9.8	6.5	0.4
DE 44	11:42	12:00	2.3	7.7	9.1	6.6	0.4
DE 105 of 105	12:24	12:42	2.7	9.1	10.7	8.0	0.4
D 43	12:49	13:07	2.3	7.6	9.1	6.7	0.4
(*) E 43	13:10	13:28	2.3	7.7	9.6	6.3	0.5
E 42	13:29	13:47	2.3	7.7	9.4	6.5	0.4
E 41	13:48	14:06	2.3	7.8	9.2	6.6	0.4
F 41-42	14:08	14:26	2.3	7.7	9.3	6.6	0.4
Σ 20' E + GE 42	14:27	14:45	2.2	7.6	9.0	6.6	0.4
***	14:48	15:06	2.2	7.2	9.2	5.8	0.5

JE 11-11-96

(108)

11-11-96

\* Note: ON Previous PIC Readings  
 #E43 was either in Heavy Vegetation,  
 Under water or a combination of both.  
 + @ 10'E of F42, on Edge of new  
 slope down to water.

\*\* APPROX. 10' N of G<sub>1</sub> & 15' W of 43. @  
 Edge of High water line.

++ APPROX. 15' NW of 1443, 1/2 way b/w  
 low & high tide mark

JE ~~Row~~ 11-11-96

11-12-96 Clear, Cold.

\* @ High <sup>TRIP 1241</sup> ~~water~~ Tide mark. Note 145  
 @ High tide

+ @ Edge of High tide.

Point	Start Time	END TIME	Integ.	Avg	MAX	MIN	STD Dev
G442	1508	1526	2.2	7.3	8.6	6.2	0.4
1443	1528	1546	2.1	7.1	8.7	6.1	0.4
G441	1556	1614	2.2	7.4	8.7	6.5	0.4
H4-40	1615	1633	2.1	7.1	9.7	6.2	0.4
	↓	Readings	0.0	11-12-96		↓	
G-32/33	0838	0856	2.1	7.1	8.6	6.2	0.4
G4/3334 *	0858	0916	2.0	6.7	8.7	5.6	0.4
F4/33-34	0918	0936	2.1	7.1	8.5	6.0	0.4
F4/34-35	0938	0956	2.2	7.4	8.6	6.1	0.4
F4/35-36	0958	1016	2.2	7.4	8.7	6.3	0.4
G-35	1016	1034	2.0	7.1	8.6	6.1	0.4
G4/3536+	1034	1058	2.0	6.7	8.5	6.7	0.4

JE R

11-11-96

JE R 11-11-96





SIGNATURE \_\_\_\_\_ DATE \_\_\_\_\_ CHECKED \_\_\_\_\_ DATE \_\_\_\_\_  
PROJECT Navy DAC JOB NO. \_\_\_\_\_  
SUBJECT PSC 18 PIC Readings SHEET \_\_\_\_\_ OF \_\_\_\_\_ SHEETS

